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Maine Agricultural Experiment Station

BULLETIN No. 53.

SEPTEMBER, 1899.

FERTILIZER INSPECTION.

This Bulletin contains the analyses of samples collected by the Station of all brands of Fertilizers licensed in 1899.

Requests for the Bulletins should be addressed to the

AGRICULTURAL EXPERIMENT STATION,

Orono, Maine.

MAINE

AGRICULTURAL EXPERIMENT STATION

ORONO, MAINE.

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FERTILIZER INSPECTION.

CHAS. D. WOODS, Director.

J. M. BARTLETT, Chemist in charge of Fertilizer Analysis.

The law regulating the sale of commercial fertilizers in this State calls for two bulletins each year. The first of these contains the analyses of the samples received from the manufacturer, guaranteed to represent, within reasonable limits, the goods to be placed upon the market later. The second bulletin contains the analyses of the samples collected in the open market by a representative of the Station.

The analyses of the manufacturer's samples for this year were published early in March. The present bulletin contains the analyses of the Station samples and of such of the manufacturer's samples as were received after Bulletin 50 was issued.

The figures which are given as the percentages of valuable ingredients guaranteed by the manufacturers are the minimum percentages of the guarantee. If, for instance, the guarantee is 2 to 3 per cent of nitrogen, it is evident that the dealer cannot be held to have agreed to furnish more than 2 per cent and so this percentage is taken as actual guarantee. The figures under the head of "found" are those showing the actual composition of the samples.

A comparison of the results of the analyses of the samples collected by the Station with the percentages guaranteed by the manufacturers shows, that, while as a rule the fertilizers sold in the State are up to guarantee, in some instances the particular lots of fertilizers sampled are not as good as they should be. The comparisons indicate that many of the manufacturers do not intend to do much more than make good the minimum guarantee and it is not surprising that this results in some of the goods falling below the guarantee in one or more ingredients. As this seems

to be a growing tendency, it has been thought best to make a list of the brands which fall considerably below guarantee. The table which follows gives the names of the goods and the ingredients in which they are deficient. No brand is included in this list unless it falls short by at least one-tenth in one or more of its ingredients. While the number of brands which are considerably below their guarantee in one or more ingredients is quite large, there is little reason for thinking that there is any intention to defraud. It frequently happens that a fertilizer which is below in one ingredient is considerably above in others. While this frees the manufacturer from the suspicion of attempting to defraud, it is nevertheless a serious defect in a fertilizer. It is not enough that a fertilizer contains an equivalent amount of some other kind of plant food. When the purchaser pays for fifty pounds of nitrogen he is not rightly treated if the manufacturer gives him thirty pounds of nitrogen, even though he gives him enough more of potash or phosphoric acid to make a financial equivalent.

One of the claims which fertilizer manufacturers are making for the superiority of their goods over "home mixed fertilizers" is that the former are "manufactured." This should mean, if it means anything, that the goods are more evenly mixed and therefore more uniform. In the tables it will be found that in some instances in which two samples of the same brand have been taken and analyzed, that they differ from each other quite materially. The samples were taken with a great deal of care by experienced men from a large number of packages. It would not seem difficult to make "home mixed fertilizers" which should run as uniform as some of the brands here reported upon.

The goods made by the Provincial Chemical Fertilizer Company differ so greatly in composition from the guarantee that the only conclusion seems to be that the company does not know what it is doing. This is illustrated by comparing the guarantee and the analysis of their Imperial Superphosphate as follows:

	Guaranteed. %	Found. %
Nitrogen	2.51	.86
Available phosphoric acid.....	9.80	9.12
Total phosphoric acid.....	12.10	17.00
Potash	1.50	5.01

Notwithstanding the great discrepancies between guarantee and the actual composition of the goods offered, it has not been deemed best to report the case to the Secretary of Agriculture. Correspondence seems to indicate that while the Company has made great mistakes, that there was no intention to defraud. If they sell goods in Maine next year they will take pains to learn their composition before offering them.

A LIST OF FERTILIZERS SOLD IN MAINE IN 1899, THE OFFICIALLY COLLECTED SAMPLES OF WHICH CONTAINED LESS THAN NINE-TENTHS OF THE GUARANTEED AMOUNTS OF ONE OR MORE OF THE FERTILIZING CONSTITUENTS.

Kind of Fertilizer.	Deficient in.
Blanchard's Fish, Bone and Potash	Total phosphoric acid.
Stockbridge Seeding Down Manure	Total phosphoric acid.
Stockbridge Top Dressing Manure.....	Nitrogen.
Bradley's Eureka Fertilizer	Available phosphoric acid.
Bradley's X. L. Phosphate	Nitrogen.
Great Planet Manure	Nitrogen.
Cleveland Bone and Potash	Potash.
Darling's Animal Fertilizer "G" Brand.....	Potash.
*Darling's Blood, Bone and Potash.....	Nitrogen and potash.
Lister's Seeding Down Fertilizer.....	Potash.
Swift's Lowell Ground Bone.....	Nitrogen.
Otis Seeding Down Fertilizer	Nitrogen and total phosphoric acid.
Philbrick's Fertilizer	Available phosphoric acid.
Provincial Chemical Fertilizer Co.'s Imperial Superphosphate.....	Nitrogen.
Provincial Chemical Fertilizer Co's Special Potato Phosphate.....	Nitrogen.
*Quinnipiac Phosphate.	Nitrogen.
Maine State Grange Potato Manure.....	Nitrogen.
Dirigo Fertilizer.....	Nitrogen and total phosphoric acid.

* A second sample drawn at another place while not up to the guarantee was better than this one.

LICENSED FERTILIZERS NOT FOUND IN THE STATE.

The following brands were licensed and probably sold in the State, but were not found by the inspector. The analysis of the manufacturers' samples of these goods is here reprinted from Bulletin 50 of this Station.

DESCRIPTIVE LIST OF MANUFACTURERS' SAMPLES, 1899.

Station number.	Manufacturer, place of business and brand.	
	E. L. LEWIS, ATLANTIC, MASS.	
2132	Lewis Potato Fertilizer.....	
	RUSSIA CEMENT CO., GLOUCESTER, MASS.	
1410	Essex Complete Manure for Corn, Grain and Grass.....	
1411	Essex Complete Manure for Potatoes, Roots and Vegetables	
2106	Essex Corn Fertilizer	
2107	Maine State Grange Seeding Down Fertilizer	
	STANDARD FERTILIZER CO., BOSTON, MASS.	
1890	Standard Bone and Potash.....	

ANALYSES OF MANUFACTURERS' SAMPLES, 1899.

Station number.	NITROGEN.				PHOSPHORIC ACID.								POTASH.	
	As ammonia, or nitrates.	As organic.	Total.		Soluble.	Reverted.	Insoluble.	Available.		Total.		Found.	Guaranteed.	
			Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.			
2132	% 1.20	% 2.36	% 3.56	% 3.28	% 3.74	% 2.40	% 1.93	% 6.14	% 5.0	% 8.07	% 6.0	% 10.43	% 10.0	
1410	.....	.....	4.00	3.70	3.02	6.39	2.51	9.41	7.0	11.92	9.5	10.52	9.5
1411	.....	.....	3.96	3.70	2.60	5.54	2.84	8.14	7.0	10.98	9.0	9.18	8.5
2106	.52	1.72	2.24	2.00	5.31	4.03	4.14	9.34	9.0	13.48	11.0	3.33	3.0	
2107	.....	1.91	1.91	1.50	3.19	4.24	6.36	7.43	7.0	13.79	13.0	5.69	5.5
1890	.....	.....	.....	.....	6.94	3.03	1.51	9.97	8.0	11.48	10.0	4.10	2.5

TRADE VALUATIONS.

In 1894 this Station stopped printing trade valuations. Although this was explained at the time, letters are occasionally received in which correspondents ask for trade valuations and our reasons for not publishing them. The reasons briefly stated are as follows:

The chief reason is that *commercial* values are not the same as *agricultural* values. Trade values are determined by market conditions, the agricultural value is measured by the increase of crop. Printing trade valuations increases the tendency, already far too strong, to purchase fertilizers on the *ton* basis without

regard to the content or form of plant food. The agricultural value of a fertilizer depends upon the amount and form of nitrogen, phosphoric acid and potash it contains and the use to which it is to be put. The purchase of a fertilizer is really the purchase of one or more of these ingredients, and the thing of first importance is not the trade value of a ton, but the kinds and pounds of plant food contained in a ton.

In the selection of a fertilizer, the first question to be decided is, what use is to be made of it. Is it nitrogen, phosphoric acid or potash that is needed, or is it any two or all three that must be had? Is the fertilizer to supplement farm manures, to act as a "starter" for the crop or must it furnish all the plant food for the crop?

Having decided just what plant food is needed, it is now time to consult the fertilizer bulletin and see which of the brands there given has an analysis nearest to the required one. In this selection generally only high grade goods (those having high percentages of plant food) should be considered, as high grade goods cannot be made from inferior sources of plant food. Low grade can be made from high grade goods by the use of "fillers," but high grade goods cannot be made from other than high class materials. Freight costs no more on a ton of goods having 500 pounds of plant food than on a ton having only 200 pounds of plant food, nor is the cost of mixing a ton of high grade goods greater than the cost of mixing low grade goods.

The final step is to inquire prices and buy the kind which comes nearest to meeting the needs at the lowest price per ton. The cost, although of great importance, is to be considered *after* the kinds and amounts of plant food needed are decided upon.

That which transcends everything else in the purchase of fertilizers is to know *what* you want and then get it—get it as cheap as you can and still get the kind of plant food needed. No one would think of buying salt for sugar because it can be obtained at a lower price, but the writer has knowledge of the purchase of nitrogen when potash was needed, simply because the trade value of a nitrogenous fertilizer as printed exceeded its selling price. The fertilizer bulletin thus became misleading to the unthinking man, and largely on this account the printing of trade values was discontinued.

DESCRIPTIVE LIST OF STATION SAMPLES, 1899.

Station number.	Manufacturer, place of business, and brand.	Sampled at.
	HIRAM BLANCHARD, EASTPORT, ME.	
2154	Blanchard's Fish, Bone and Potash	Houlton
	BOWKER'S FERTILIZER CO., BOSTON, MASS.	
2155	Bowker's Bone and Wood Ash Fertilizer.....	Belfast.....
2156	Bowker's Corn Phosphate.....	Portland
2157	Bowker's Early Potato Manure	Caribou.....
2158	Bowker's Farm and Garden Phosphate.....	Portland.....
2159	Bowker's Fresh Ground Bone	Portland
2160	Bowker's High Grade Fertilizer	Bangor
2161	Bowker's Hill and Drill Phosphate	Portland.....
2162	Bowker's Lawn and Garden Dressing	Portland
2163	Bowker's Market Garden Manure.....	Bangor
2164	Bowker's Potash—Bone	Bangor
2165	Bowker's Potato and Vegetable Manure.....	Houlton
2166	Bowker's Potato and Vegetable Phosphate	Houlton
2167	Bowker's 6% Potato Fertilizer	Presque Isle ...
2168	Bowker's Special Fertilizers—Potato and Vegetables.....	Bangor
2169	Bowker's Square Brand Bone and Potash.....	Presque Isle ...
2170	Bowker's Staple Phosphate or 3% Fertilizer	Belfast.....
2171	Bowker's Superphosphate with Potash.....	Belfast.....
2172	Bowker's Sure Crop Phosphate.....	Portland.....
2173	Bowker's 10% Manure	Houlton
2174	Gloucester Fish and Potash.....	Belfast
2175	Stockbridge Corn and Grain Manure.....	Portland.....
2176	Stockbridge Pea and Bean Manure	Bangor
2177	Stockbridge Potato and Vegetable Manure	Houlton
2178	Stockbridge Seeding Down Manure.....	Bangor
2179	Stockbridge Strawberry Manure	Bangor
2180	Stockbridge Top Dressing Manure.....	Bangor.....
	BRADLEY FERTILIZER CO., BOSTON, MASS.	
2181	Bradley's Complete Manure for Potatoes and Vegetables....	Houlton
2299	Bradley's Complete Manure for Potatoes and Vegetables.....	Portland.....
2182	Bradley's Corn Phosphate.....	Portland
2183	Bradley's English Lawn Fertilizer.....	Bangor
2184	Bradley's Eureka Fertilizer.....	Bangor
2185	Bradley's Potato Fertilizer	Portland
2186	Bradley's Potato Manure	Portland
2187	Bradley's X. L. Phosphate	Belfast
2300	Bradley's X. L. Phosphate	Portland
	CLARK'S COVE FERTILIZER CO., BOSTON, MASS.	
2188	Bay State Defiance Phosphate.....	Portland
2189	Bay State Fertilizer	Bangor
2190	Bay State Fertilizer for Seeding Down	Bangor.....
2191	Bay State Fertilizer, G. G	Bangor
2192	Great Planet Manure	Houlton
2301	Great Planet Manure	Bangor
2193	King Philip Alkaline Guano for Potatoes	Belfast
2194	Triumph Bone and Potash.....	Bangor

ANALYSES OF STATION SAMPLES, 1899.

Station number.	NITROGEN.				PHOSPHORIC ACID.								POTASH.	
	As ammonia or nitrates.	As organic.	Total.		Soluble.	Reverted.	Insoluble.	Available.		Total.		Found.	Guaranteed.	
			Found.	Guaran- teed.				Found.	Guaran- teed.	Found.	Guaran- teed.			
2154	% .74	% 1.97	% 2.71	% 2.50	.....	% 1.86	% 2.02	% 1.86	% 2.00	% 3.88	% 4.50	% 5.33	% 4.50
2155	1.62	.01	1.63	1.50	.....	7.16	3.83	7.16	6.00	10.99	8.00	2.45	2.00
2156	.84	.73	1.57	1.60	2.87	5.01	2.63	7.88	7.00	10.51	9.00	2.59	2.00	
2157	1.90	1.26	3.16	3.00	4.67	2.71	1.86	7.38	7.00	9.24	9.00	8.16	7.00	
2158	.68	.98	1.66	1.50	7.07	3.12	1.56	10.19	8.00	11.75	10.00	2.22	2.00	
2159	.12	2.51	2.63	2.25	.....	.....	.....	.....	22.67	18.00	.....	.....	.....
2160	1.38	1.11	2.49	2.25	5.69	2.81	2.58	8.50	8.00	11.08	10.00	4.65	4.00	
2161	.86	1.47	2.33	2.25	7.42	2.64	1.30	10.06	9.00	11.36	12.00	2.41	2.00	
2162	3.83	.....	3.83	3.00	.....	7.12	1.90	7.12	6.00	9.02	8.00	5.14	5.00
2163	.88	1.86	2.74	2.25	4.21	2.04	2.03	6.25	6.00	8.28	8.00	10.69	10.00	
2164	.70	.16	.86	.75	2.76	3.11	2.58	5.87	6.00	8.45	8.00	2.26	2.00	
2165	1.36	1.02	2.38	2.25	5.45	2.96	2.91	8.41	9.00	11.32	11.00	4.12	4.00	
2166	.88	.71	1.59	1.50	5.74	3.51	1.86	9.25	8.00	11.11	10.00	2.35	2.00	
2167	.66	.33	.99	.75	5.28	3.08	2.26	8.36	7.00	10.62	10.00	6.37	6.00	
2168	1.30	1.29	2.59	2.25	4.99	3.25	2.53	8.24	8.00	10.77	10.00	4.56	4.00	
2169	.08	1.99	2.07	1.50	1.53	4.45	6.05	5.98	6.00	12.03	12.00	2.41	2.00	
2170	.80	.23	1.03	.75	6.24	3.38	2.03	9.62	8.00	11.65	10.00	3.15	3.00	
2171	.....	.....	.....	.....	.75	8.87	3.46	9.62	10.00	13.08	11.00	2.16	2.00
2172	.49	.53	1.02	.75	6.14	3.61	2.44	9.75	8.00	12.19	10.00	2.30	1.00	
2173	.58	.39	.97	.75	2.58	4.18	3.15	6.76	6.00	9.91	8.00	10.46	10.00	
2174	.63	.25	.88	.75	5.50	4.23	3.57	9.73	6.00	13.30	9.00	1.49	1.00	
2175	1.24	1.97	3.21	3.00	6.91	2.28	.85	9.19	8.00	10.04	10.00	7.28	6.00	
2176	.78	2.07	2.85	2.00	3.96	2.26	2.03	6.22	6.00	8.25	8.00	9.96	6.00	
2177	1.26	2.02	3.28	3.25	4.59	2.23	2.83	6.82	6.00	9.65	7.00	11.99	10.00	
2178	.66	2.08	2.74	2.50	4.48	2.27	1.79	6.75	6.00	8.54	12.00	10.60	10.00	
2179	1.36	1.30	2.66	2.25	5.61	4.19	3.33	9.80	6.00	13.13	7.00	4.94	4.00	
2180	3.48	.75	4.23	5.00	4.99	2.67	1.42	7.66	4.00	9.08	6.00	7.10	6.00	
2181	1.09	1.89	2.98	3.30	5.63	2.72	2.23	8.35	8.00	10.58	9.00	6.81	7.00	
2239	1.38	1.71	3.09	3.30	4.16	4.32	1.88	8.48	8.00	10.36	9.00	6.32	7.00	
2182	.12	2.07	2.19	2.05	6.49	2.99	2.37	9.48	9.00	11.85	10.00	2.19	1.50	
2183	4.92	.01	4.93	4.95	4.61	4.45	1.42	6.06	5.00	7.48	6.00	3.20	2.50	
2184	.10	1.83	1.93	1.03	3.33	2.15	5.05	5.48	8.00	10.53	9.00	2.16	2.00	
2185	.24	2.34	2.58	2.06	5.44	3.58	2.63	9.02	9.00	11.65	11.00	3.57	3.25	
2186	.82	1.70	2.52	2.50	6.59	.15	2.92	6.74	6.00	9.66	8.00	5.87	5.00	
2187	1.04	1.28	2.32	2.50	6.94	2.91	1.99	9.85	9.00	11.84	11.00	2.35	2.00	
2300	.44	1.79	2.23	2.50	5.87	3.76	2.77	9.63	9.00	12.40	11.00	2.40	2.00	
2188	.18	.94	1.12	.82	2.42	5.93	3.19	8.35	7.00	11.54	9.00	1.20	1.00	
2189	.90	1.72	2.62	2.47	6.75	2.87	2.07	9.62	9.00	11.69	10.00	1.90	2.00	
2190	.06	1.07	1.13	1.03	5.92	2.46	1.93	8.38	8.00	10.31	10.00	2.61	2.00	
2191	.14	2.13	2.27	1.85	5.81	3.25	2.28	9.06	8.50	11.34	10.00	2.24	2.00	
2192	1.18	1.78	2.96	3.30	5.85	1.54	3.19	7.39	8.00	10.58	9.00	7.87	7.00	
2301	.74	1.93	2.67	3.30	2.22	5.43	3.09	7.65	8.00	10.74	9.00	6.39	7.00	
2193	.10	1.33	1.43	1.23	4.58	3.51	3.46	8.09	6.50	11.55	8.00	3.26	3.00	
2194	.....	.....	.....	.....	8.96	1.16	2.28	10.12	10.00	12.40	11.00	2.05	2.00

DESCRIPTIVE LIST OF STATION SAMPLES, 1899.

Station number.	Manufacturer, Place of Business, and Brand.	Sampled at
	CLEVELAND DRYER CO., BOSTON, MASS.	
2298	Cleveland Bone and Potash.....	Bangor.....
2195	Cleveland Fertilizer for All Crops.....	Portland.....
2196	Cleveland Pioneer Fertilizer.....	Bangor.....
2197	Cleveland Potato Phosphate.....	Portland.....
2198	Cleveland Seeding Down Fertilizer.....	Portland.....
2199	Cleveland Superphosphate.....	Portland.....
	E. FRANK COE CO., NEW YORK, N. Y.	
2200	E. Frank Coe's Bay State Phosphate.....	Belfast.....
2201	E. Frank Coe's Columbian Special Corn Fertilizer.....	Bangor.....
2202	E. Frank Coe's Columbian Special Potato Fertilizer.....	Portland.....
2203	E. Frank Coe's Excelsior Potato Fertilizer.....	Belfast.....
2204	E. Frank Coe's Grass and Grain Fertilizer.....	Portland.....
2205	E. Frank Coe's High Grade Ammoniated Bone Phosphate.....	Belfast.....
2206	E. Frank Coe's High Grade Potato Fertilizer.....	Belfast.....
2207	E. Frank Coe's New Englander Potato Fertilizer.....	Bangor.....
3208	E. Frank Coe's Prize Brand Grain and Grass Fertilizer.....	Portland.....
2209	E. Frank Coe's Special Potato Fertilizer.....	Bangor.....
2210	E. Frank Coe's Standard Grade Ammoniated Bone Phosphate.....	Portland.....
	CROCKER CHEM. & FERT. CO., BUFFALO, N. Y.	
2211	Crocker's Ammoniated Corn Phosphate.....	Bangor.....
2213	Crocker's Ammoniated Corn Phosphate.....	Bangor.....
2212	Crocker's New Rival Superphosphate.....	Bangor.....
2214	Crocker's New Rival Superphosphate.....	Bangor.....
2213	Crocker's Potato, Hop and Tobacco Phosphate.....	Bangor.....
2215	Crocker's Potato, Hop and Tobacco Phosphate.....	Bangor.....
2214	Crocker's Superior Fertilizer.....	Bangor.....
2216	Crocker's Superior Fertilizer.....	Bangor.....
2215	Crocker's Superior Rye and Oats Fertilizer.....	Bangor.....
	CUMBERLAND BONE PHOS. CO., PORTLAND, ME.	
2216	Cumberland Hawkeye Fertilizer.....	Bangor.....
2217	Cumberland Potato Fertilizer.....	Belfast.....
2218	Cumberland Seeding Down Manure.....	Bangor.....
2219	Cumberland Superphosphate.....	Bangor.....
	L. B. DARLING FERT. CO., PAWTUCKET, R. I.	
2220	Darling's Animal Anchor Brand.....	Augusta.....
2221	Darling's Animal Fertilizer "G" Brand.....	Augusta.....
2222	Darling's Blood, Bone and Potash.....	Houlton.....
2202	Darling's Blood, Bone and Potash.....	Augusta.....
	F. S. FARRAR & CO., BANGOR, ME.	
2223	Farrar's Potato Manure.....	Bangor.....
2224	Farrar's Superphosphate.....	Bangor.....
	GREAT EASTERN FERTILIZER CO., RUTLAND, VT.	
2225	Great Eastern Dissolved Bone.....	Portland.....
2226	Great Eastern Gen. Fertilizer.....	Portland.....
2227	Great Eastern Grass and Oats Fertilizer.....	Portland.....
2228	Great Eastern Northern Corn Special.....	Bangor.....
2229	Great Eastern Potato Manure.....	Bangor.....
	LISTER'S AGRICUL. CHEM. WORKS, NEWARK, N. J.	
2230	Lister's Seeding Down Fertilizer.....	Bangor.....
2231	Lister's Special Potato Fertilizer.....	Bangor.....
2232	Lister's Success Fertilizer.....	Bangor.....
2233	Lister's "U. S." Superphosphate.....	Bangor.....

ANALYSES OF STATION SAMPLES, 1899.

Station number.	NITROGEN.				PHOSPHORIC ACID.								POTASH.	
	As ammonia or nitrates.	As organic.	Total.		Soluble.	Reverted.	Insoluble.	Available.		Total.		Found.	Guaranteed.	
			Found.	Guaran- teed.				Found.	Guaran- teed.	Found.	Guaran- teed.			
	%	%	%	%	%	%	%	%	%	%	%	%	%	
2298	.....	.....	.....	.....	6.62	3.50	2.63	10.12	8.00	12.75	10.00	2.21	2.50
2195	.14	1.22	1.36	1.03	7.42	.75	1.70	8.17	8.00	9.87	9.00	2.10	2.00	
2196	.18	1.08	1.26	.82	3.94	4.58	2.59	8.52	7.00	11.11	9.00	1.33	1.00	
2197	1.02	1.24	2.26	2.05	3.24	5.29	2.39	8.53	8.00	10.92	10.00	2.86	3.00	
2198	.08	2.00	2.08	1.03	5.61	4.19	1.33	9.80	8.00	11.33	9.00	2.32	2.00	
2199	.20	1.94	2.14	2.05	5.26	3.56	2.79	8.82	9.00	11.61	11.00	2.51	2.00	
2200	.24	1.61	1.85	2.00	6.86	2.34	2.32	9.20	9.00	11.52	11.00	3.30	1.85	
2201	.20	1.30	1.50	1.23	6.86	2.99	2.68	9.85	8.50	12.53	10.50	3.03	2.50	
2202	.24	1.09	1.33	1.20	5.68	3.27	2.93	8.95	8.50	11.88	10.00	*2.91	2.50	
2203	.62	2.07	2.69	2.50	6.62	1.63	2.22	8.25	8.00	10.47	8.00	*8.09	8.00	
2204	.20	.84	1.04	.80	6.62	3.34	1.59	9.99	8.50	11.55	10.00	2.28	1.50	
2205	.18	1.96	2.14	1.85	6.86	2.61	2.19	9.47	9.00	11.66	11.00	2.66	2.25	
2206	1.20	1.54	2.74	2.40	6.19	2.20	2.17	8.39	7.00	10.56	8.00	*6.35	6.50	
2207	.08	.99	1.07	.80	4.75	3.65	3.29	8.40	7.00	11.69	9.00	3.38	3.00	
2208	.....	.....	.....	.....	7.18	3.47	2.12	10.65	10.50	12.77	12.00	2.26	2.00
2209	.30	1.64	1.94	1.65	7.34	1.84	3.38	9.18	8.00	12.56	10.00	*4.21	4.00	
2210	.22	1.27	1.49	1.20	7.03	2.88	2.42	9.91	8.50	12.33	10.00	2.45	2.25	
2211	.10	2.22	2.32	2.05	6.33	3.54	1.47	9.87	10.00	11.34	11.00	1.74	1.62	
2213	.04	2.12	2.16	2.05	6.62	3.05	2.17	9.67	10.00	11.84	11.00	1.76	1.62	
2212	.10	1.40	1.50	1.23	5.50	4.08	2.33	9.63	10.00	11.96	11.00	1.75	1.62	
2214	.04	1.36	1.40	1.23	6.94	2.08	2.64	9.02	10.00	11.66	11.00	1.73	1.62	
2213	.08	2.12	2.20	2.05	5.95	3.77	1.84	9.72	10.00	11.56	11.00	3.32	3.24	
2215	.42	1.80	2.22	2.05	6.65	3.01	1.63	9.66	10.00	11.29	11.00	3.26	3.24	
2214	.04	1.06	1.10	.82	3.94	3.69	1.95	7.63	8.00	9.59	9.00	2.03	2.00	
2216	.08	.92	1.00	.82	5.02	3.36	1.79	8.38	8.00	10.17	9.00	2.59	2.00	
2215	.08	.92	1.00	.82	5.12	4.07	1.28	9.19	8.00	10.47	9.00	2.81	2.00	
2216	.10	1.18	1.28	.82	5.31	3.41	1.93	8.72	7.00	10.65	9.00	1.43	1.00	
2217	.87	1.19	2.06	2.06	5.95	3.05	1.16	9.00	9.00	10.16	11.00	2.90	3.00	
2218	.06	1.14	1.20	1.03	5.93	2.74	1.80	8.67	8.00	10.47	10.00	2.43	2.00	
2219	.89	1.17	2.06	2.06	6.01	2.88	2.12	8.89	8.00	11.01	10.00	2.63	2.00	
2220	.16	2.05	2.21	1.65	7.10	2.32	.79	9.42	6.00	10.21	7.00	2.10	2.00	
2221	.16	2.23	2.39	2.06	7.23	2.02	.75	9.25	6.00	10.00	7.00	3.51	4.00	
2222	1.27	2.32	3.59	4.12	5.17	3.88	.68	9.05	7.00	9.73	8.00	6.72	7.50	
2202	.90	2.70	3.60	4.12	5.69	2.88	.74	8.57	7.00	9.31	8.00	7.73	7.50	
2223	.....	.....	3.60	2.25	1.50	7.80	6.91	9.30	9.00	16.21	12.00	2.76	3.00
2224	.....	.....	3.46	2.50	1.44	7.86	6.93	9.30	9.00	16.23	12.00	2.70	2.00
2225	.....	.....	.....	.....	11.16	3.60	.36	14.76	14.00	15.12	.....	.....	.....
2226	.06	.88	.94	.82	5.92	3.41	1.54	9.33	8.00	10.87	.....	5.11	4.00
2227	.....	.....	.....	.....	7.40	4.21	2.09	11.61	11.00	13.70	.....	1.80	2.00
2228	.16	2.93	3.09	2.88	.77	6.54	3.85	7.31	8.00	11.16	.....	2.64	2.00
2229	.14	2.21	2.35	2.06	1.23	7.04	2.68	8.27	8.00	10.95	.....	4.57	4.00
2230	.14	.80	.94	.62	7.18	3.25	2.19	10.43	10.00	12.62	11.00	1.49	1.92	
2231	.22	1.51	1.73	1.65	5.18	2.74	3.00	7.92	8.00	10.92	9.00	3.51	3.00	
2232	.24	1.27	1.51	1.24	6.78	2.73	2.54	9.51	9.50	12.05	11.50	2.24	2.00	
2233	.20	1.29	1.49	1.32	3.16	3.86	2.74	7.02	7.00	9.76	8.00	2.77	2.00	

* Largely sulphate.

DESCRIPTIVE LIST OF STATION SAMPLES, 1899.

Station number.	Manufacturer, place of business, and brand.	Sampled at.
	LOWELL FERTILIZER CO., BOSTON, MASS.	
2234	Swift's Lowell Animal Fertilizer	Bangor
2235	Swift's Lowell Bone Fertilizer	Bangor
2236	Swift's Lowell Dissolved Bone and Potash	Bangor
2237	Swift's Lowell Ground Bone	Bangor
2238	Swift's Lowell Potato Phosphate	Bangor
	NATIONAL FERTILIZER CO., BRIDGEPORT, CONN.	
2239	Chittenden's Ammoniated Bone Fertilizer	Presque Isle ...
2240	Chittenden's Complete Root Fertilizer	Caribou
2241	Chittenden's Market Garden Fertilizer	Fort Fairfield..
	SAMUEL G. OTIS, HALLOWELL, ME.	
2242	Otis Potato Fertilizer	Hallowell
2243	Otis Seeding Down Fertilizer	So. Windham ..
2244	Otis Superphosphate	So. Windham ..
	PACIFIC GUANO CO., BOSTON, MASS.	
2245	Pacific Guano Co.'s Dissolved Bone and Potash	Bangor
2246	Pacific Guano Co.'s Grass and Grain Fertilizer	Portland
2247	Pacific Guano Co.'s Potato Special	Belfast
2248	Nobsque Guano	Bangor
2249	Soluble Pacific Guano	Bangor
2250	Soluble Pacific Guano	Portland
	PACKER'S UNION FERT. CO., NEW YORK, N. Y.	
2250	Packer's Union Animal Corn Fertilizer	Portland
2251	Packer's Union High Grade Potato Manure	Blaine
2252	Packer's Union Universal Fertilizer	Blaine
2253	Packer's Union Wheat, Oats and Potato Fertilizer	Blaine
	PARMENTER & POLSEY FER. CO., PEABODY, MASS.	
2254	"A. A." Brand	Presque Isle ...
2255	Plymouth Rock Brand	Presque Isle ...
2256	"P. and P." Potato Fertilizer	Presque Isle ...
2257	Parmenter & Polsey Special Potato Fertilizer	Presque Isle ...
2258	Star Brand Superphosphates	Presque Isle ...
	EDWIN J. PHILBRICK, AUGUSTA, ME.	
2259	Philbrick's Fertilizer	Augusta
	PORTLAND RENDERING CO., PORTLAND, ME.	
2260	Portland Rendering Co.'s Bone Tankage	East Deering ..
	PROVINCIAL CHEM. FERT. CO., LTD, ST. JOHN, N. B., CANADA.	
2261	Imperial Superphosphate	Presque Isle ...
2262	Provincial Chemical Fert. Co.'s Special Potato Phosphate	Presque Isle ...
	THE QUINNIPIAC CO., BOSTON, MASS.	
2263	Quinnipiac Climax Phosphate	Bangor
2264	Quinnipiac Corn Manure	Portland
2265	Quinnipiac Phosphate	Portland
2304	Quinnipiac Phosphate	Belfast
2266	Quinnipiac Potato Manure	Bangor
2305	Quinnipiac Potato Manure	Portland
2267	Quinnipiac Potato Phosphate	Bangor
2306	Quinnipiac Potato Phosphate	Portland
2268	Quinnipiac Seeding Down Manure	Portland
	READ FERTILIZER CO., NEW YORK, N. Y.	
2269	Read's Potato Manure	Bucksport
2307	Read's Potato Manure	Portland
2270	Read's Practical Potato Special	Bucksport
2271	Read's Standard Superphosphate	Bucksport
2272	Read's Sure Catch Fertilizer	Portland
2273	Read's Vegetable and Vine Fertilizer	Bucksport
2274	Sampson Fertilizer	Bucksport

ANALYSES OF STATION SAMPLES, 1899.

Station number.	NITROGEN.				PHOSPHORIC ACID.								POTASH.	
	As ammonia or nitrate.	As organic.	Total.		Soluble.	Reverted.	Insoluble.	Available.		Total.		Found.	Guaranteed.	
			Found.	Guaran- teed.				Found.	Guaran- teed.	Found.	Guaran- teed.			
	%	%	%	%	%	%	%	%	%	%	%	%	%	
2234	.06	2.56	2.62	2.46	7.66	1.59	1.48	9.25	9.00	10.73	10.00	4.59	4.00	
2235	.10	1.66	1.76	1.64	4.23	3.31	2.04	7.54	8.00	9.58	9.00	4.13	3.00	
2236	.12	1.84	1.96	1.64	6.01	2.92	2.18	8.83	9.00	11.61	10.00	2.35	2.00	
2237	.08	2.00	2.08	2.46	.....	.....	.....	.....	5.00	28.94	28.00	.....	.....
2238	.14	2.42	2.56	2.46	5.26	2.54	1.56	7.80	8.00	9.36	9.00	*6.51	6.00	
2239	.12	1.92	2.04	1.60	3.40	6.31	2.14	9.71	9.00	11.86	10.00	2.35	2.00	
2240	.18	3.34	3.52	3.30	5.42	2.72	3.04	8.14	8.00	11.18	10.00	6.27	6.00	
2241	.48	2.08	2.56	2.40	5.63	2.10	2.95	7.73	7.00	10.68	9.00	7.00	6.00	
2242	.16	2.17	2.33	2.00	5.14	4.02	2.58	9.16	9.00	11.74	11.00	3.52	3.00	
2243	.12	1.14	1.26	1.50	5.34	4.00	1.39	9.34	8.00	10.73	12.00	1.89	2.00	
2244	.22	1.90	2.12	2.00	6.22	3.67	2.31	9.89	9.50	12.20	11.00	2.27	2.00	
2245	...	.....	.....	.....	6.14	4.93	2.65	11.07	10.00	13.72	11.00	2.07	2.00
2246	.12	1.12	1.24	.82	4.74	2.70	2.42	7.44	7.00	9.86	8.00	1.83	1.08	
2247	.14	1.97	2.11	2.05	6.06	4.34	1.57	10.40	8.00	11.97	9.00	3.25	3.00	
2248	.18	1.10	1.28	1.15	5.10	3.79	1.71	8.89	8.00	10.60	9.00	2.49	2.00	
2249	.08	2.02	2.10	2.25	6.25	3.24	2.11	9.49	8.50	11.60	10.50	2.17	2.00	
2250	.08	2.14	2.22	2.25	3.94	4.66	2.48	8.60	8.50	11.08	10.50	2.66	2.00	
2251	.22	2.46	2.68	2.47	3.35	6.18	2.09	9.53	8.00	11.62	9.00	2.23	2.00	
2252	.22	2.02	2.24	2.06	1.07	6.98	1.94	8.05	8.00	9.99	9.00	6.20	6.00	
2253	.36	.78	1.14	.82	4.63	4.58	3.56	9.21	8.00	12.77	9.00	5.40	5.00	
2253	.....	.....	.....	.....	7.10	5.56	2.79	12.66	11.00	15.45	.....	2.48	2.00
2254	3.00	1.21	4.21	4.53	3.56	4.59	1.19	8.15	7.00	9.34	8.00	9.46	8.00	
2255	1.38	1.29	2.67	2.47	5.12	4.82	1.62	9.94	8.00	11.56	9.00	5.02	4.00	
2256	1.40	.86	2.26	1.64	2.66	4.34	1.33	7.00	6.00	8.33	7.00	7.03	5.50	
2257	2.04	1.23	3.27	3.29	4.63	3.94	1.16	8.57	8.00	9.73	9.00	8.30	7.00	
2258	.04	1.74	1.78	1.64	3.37	4.43	1.85	7.80	7.00	9.65	8.00	3.26	2.50	
2259	1.40	.64	2.04	2.00	2.52	3.72	4.02	6.24	7.00	10.26	9.00	6.72	5.00	
2260	.....	.....	4.54	4.42	.....	6.14	10.51	6.14	.....	16.65	18.59	.....	.....
2261	.10	.76	.86	2.51	7.18	1.94	7.88	9.12	9.80	17.00	12.10	5.01	1.50	
2262	.16	.76	.92	3.08	7.00	2.50	7.22	9.50	10.11	16.72	12.28	6.43	6.02	
2263	.12	1.04	1.16	1.03	4.98	3.88	1.45	8.86	8.00	10.31	9.00	2.64	2.00	
2264	.12	2.09	2.21	2.06	5.42	3.86	2.48	9.28	9.00	11.76	10.00	2.39	1.50	
2265	1.06	1.34	2.40	2.47	4.00	5.38	1.75	9.38	9.00	11.13	10.00	1.97	2.00	
2264	.10	2.00	2.10	2.47	5.63	3.02	1.51	8.65	9.00	10.16	10.00	2.79	2.00	
2266	1.70	.66	2.36	2.47	4.88	2.66	.89	7.54	6.00	8.43	7.00	4.55	5.00	
2305	.70	1.57	2.27	2.47	4.45	3.97	1.34	8.42	6.00	9.76	7.00	4.65	5.00	
2267	1.76	.23	1.99	2.05	2.03	6.61	2.51	8.64	8.00	11.18	9.00	3.02	3.00	
2306	.54	1.69	2.23	2.05	3.01	5.51	2.64	8.52	8.00	11.16	9.00	3.00	3.00	
2268	.12	1.12	1.24	.82	4.42	5.29	1.61	9.71	9.00	11.32	10.00	2.39	2.00	
2269	.12	2.20	2.32	2.47	4.53	3.46	2.68	7.99	7.00	10.67	8.00	10.75	10.00	
2307	.94	1.42	2.36	2.47	6.59	2.24	.79	8.83	7.00	9.62	8.00	*10.00	10.00	
2270	.04	.99	1.03	.82	2.11	2.31	1.26	4.42	4.00	5.68	5.00	9.13	8.00	
2271	.10	1.00	1.10	.82	5.09	3.00	1.16	8.09	8.00	9.25	9.00	4.40	4.00	
2272	.....	.....	.....	.....	1.79	4.33	.91	6.12	6.00	7.03	7.00	3.63	4.00
2273	.04	1.71	1.75	1.65	4.43	2.46	.93	6.89	6.00	7.82	7.00	8.96	8.00	
2274	.10	1.68	1.78	1.65	4.31	2.31	.91	6.62	6.00	7.53	7.00	4.52	4.00	

* Largely sulphate.

DESCRIPTIVE LIST OF STATION SAMPLES, 1899.

Station number.	Manufacturer, Place of Business, and Brand.	Sampled at
	RUSSIA CEMENT CO., GLOUCESTER, MASS.	
2275	Essex Potato Fertilizer	Presque Isle ...
2276	Essex XXX Fish and Potash	Presque Isle ...
2277	Maine State Grange Chemicals	Houlton
2278	Maine State Grange Potato Manure	Houlton
	SAGADAHOC FERT. CO., BOWDOINHAM, ME.	
2279	Dirigo Fertilizer	Cumberland ...
2280	Merrymeeting Superphosphate	Brewer
2281	Sagadahoc Bone Meal	Bowdoinham ..
2282	Sagadahoc Special Potato Fertilizer	Brewer
2308	Sagadahoc Special Potato Fertilizer	Cumberland ...
2283	Sagadahoc Superphosphate	Cumberland ...
2284	Yankee Fertilizer	Brewer
	STANDARD FERTILIZER CO., BOSTON, MASS.	
2285	Standard A Brand	Portland
2297	Standard Bone and Potash	Garland
2286	Standard Fertilizer	Bangor
2287	Standard Guano	Portland
2288	Standard Special for Potatoes	Bangor
2309	Standard Special for Potatoes	Portland
	HENRY F. TUCKER CO., BOSTON, MASS.	
2289	Tucker's Original Bay State Bone Superphosphate	Portland
	JOHN WATSON, HOULTON, ME.	
2136	Watson's Potato Manure	Houlton
	WILLIAMS & CLARK FERT. CO., BOSTON, MASS.	
2290	Americus Ammoniated Bone Superphosphate	Portland
2291	Americus Corn Phosphate	Portland
2310	Americus Corn Phosphate	Bangor
2292	Americus Potato Manure	Bangor
2311	Americus Potato Manure	Portland
2293	Prolific Crop Producer	Belfast
2294	Royal Bone Phosphate for All Crops	Bangor
2295	Williams & Clark's Potato Phosphate	Portland
	A. F. YOUNG AND CO., NEW YORK, N. Y.	
2296	Young's Excelsior Potato Fertilizer	Presque Isle ...

ANALYSES OF STATION SAMPLES, 1899.

Station number.	NITROGEN.				PHOSPHORIC ACID.								POTASH.	
	As ammonia or nitrates.	As organic.	Total.		Soluble.	Reverted.	Insoluble.	Available.		Total.		Found.	Guaranteed.	
			Found.	Guaran- teed.				Found.	Guaran- teed.	Found.	Guaran- teed.			
	%	%	%	%	%	%	%	%	%	%	%	%	%	
2275	.98	1.02	2.00	2.00	3.83	7.53	3.85	11.36	9.00	15.21	11.60	6.29	5.00	
2276	.08	2.46	2.54	2.10	4.59	6.07	5.10	10.66	9.00	15.76	12.00	2.46	2.25	
2277	1.64	.89	2.53	2.50	4.86	3.83	4.39	8.69	8.00	13.08	12.00	4.31	4.00	
2278	.70	.32	1.02	1.50	3.51	7.33	2.49	10.84	9.00	13.33	12.00	12.47	12.00	
2279	.08	1.38	1.46	2.00	1.99	3.30	2.76	5.29	3.00	8.05	10.00	5.53	4.00	
2280	.30	1.34	1.64	1.50	3.11	2.95	2.23	6.06	5.00	8.29	9.00	3.14	2.00	
2281	.18	4.33	4.51	3.00	.....	.....	.....	.....	.....	18.09	20.00	.....	.....
2282	1.56	.60	2.16	2.40	5.26	3.43	1.03	8.69	6.00	9.72	10.00	*8.67	7.00	
2308	1.48	.90	2.38	2.40	5.49	3.01	.84	8.50	6.00	9.34	10.00	*8.65	7.00	
2283	1.36	.67	2.03	2.10	5.58	3.28	1.35	8.86	6.00	10.21	10.00	6.12	4.00	
2284	.14	.92	1.06	.50	2.36	3.75	1.25	6.11	3.00	7.36	7.00	4.39	1.50	
2285	.14	1.06	1.20	.82	3.38	5.22	2.67	8.60	7.00	11.27	9.00	1.18	1.00	
2297	.....	.....	.....	.....	6.08	4.17	1.77	10.25	8.00	12.02	10.00	2.39	2.50
2286	.76	1.45	2.21	2.00	6.09	4.00	1.84	10.09	8.00	11.93	10.00	2.22	2.00	
2287	.82	.70	1.52	1.25	7.23	2.33	2.58	9.56	6.50	12.14	8.50	3.28	3.00	
2288	1.02	.94	1.96	2.05	2.47	5.76	2.51	8.23	8.00	10.74	9.00	3.20	3.00	
2309	.56	1.74	2.30	2.05	2.55	6.62	2.63	8.57	8.00	11.20	9.00	2.83	3.00	
2289	.12	2.13	2.25	2.06	5.53	3.95	1.56	9.48	9.00	11.04	11.00	2.24	2.00	
2136	.16	2.39	2.55	2.50	2.49	3.56	.84	6.05	6.00	6.89	7.00	5.00	5.00	
2290	.92	1.42	2.34	2.47	6.27	4.02	2.16	10.29	9.00	12.45	10.00	2.36	2.00	
2291	.12	2.23	2.35	2.06	5.15	3.74	2.70	8.89	9.00	11.59	10.00	2.29	1.50	
2310	.10	2.13	2.23	2.06	5.01	3.83	3.00	8.84	9.00	11.84	10.00	1.98	1.50	
2292	1.02	.99	2.01	2.06	2.55	6.11	2.50	8.66	8.00	11.16	9.00	2.84	3.00	
2311	.38	1.78	2.16	2.06	2.44	6.78	2.19	9.22	8.00	11.41	9.00	2.99	3.00	
2293	.10	1.12	1.22	.82	6.27	3.15	2.03	9.42	6.00	11.45	7.00	1.51	1.00	
2294	.14	1.02	1.16	1.03	5.10	4.10	1.43	9.20	7.00	10.69	8.00	2.30	2.00	
2295	1.00	1.48	2.48	2.47	3.54	4.09	1.63	7.63	6.00	9.26	7.00	5.14	5.00	
2296	1.86	.88	2.74	2.88	3.68	2.81	.60	6.49	5.50	7.09	.....	10.33	10.00

* Largely sulphate.

DESCRIPTIVE LIST OF MANUFACTURERS' SAMPLES, 1899.*

Station No.	Manufacturer, place of business, and brand.
	BOWKER FERTILIZER CO., BOSTON, MASS.
2145	Bowker's Early Potato Manure
2146	Bowker's Lawn and Garden Dressing
2147	Bowker's Potash—Bone
2148	Bowker's Potato and Vegetable Manure.
	BRADLEY FERTILIZER CO., BOSTON, MASS.
2137	Bradley's English Lawn Fertilizer
	CLARK'S COVE FERTILIZER CO., BOSTON, MASS.
2138	Great Planet Manure
2139	Triumph Bone and Potash.
	CLEVELAND DRYER CO., BOSTON, MASS.
2140	Cleveland Bone and Potash
	E. FRANK COE CO., NEW YORK, N. Y.
2141	E. Frank Coe's New Englander Potato Fertilizer
	PARMENTER & POLSEY FERTILIZER CO., PEABODY, MASS.
2142	"A. A." Brand.
	PROVINCIAL CHEMICAL FERTILIZER CO., LTD, ST. JOHN, N. B.
2135	Imperial Superphosphate
2134	Special Potato Phosphate
	READ FERTILIZER CO., SYRACUSE, N. Y.
2143	Read's Potato Manure
	WILLIAMS & CLARK FERTILIZER CO., BOSTON, MASS.
2144	Prolific Crop Producer

ANALYSES OF MANUFACTURERS' SAMPLES, 1899.*

Station number.	NITROGEN.				PHOSPHORIC ACID.								POTASH.	
	As ammonia or nitrates.	As organic.	Total.		Soluble.	Reverted.	Insoluble.	Available.		Total.		Found.	Guaranteed.	
			Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.			
2145	% 1.06	% 1.94	% 3.00	% 3.00	% 5.14	% 2.67	% 1.99	% 7.81	% 7.00	% 9.80	% 9.00	% 7.72	% 7.00	
2146	3.64	.17	3.81	3.00	5.02	1.84	1.89	6.86	6.00	8.75	8.00	5.81	5.00	
2147	.87	.....	.87	.75	1.83	5.41	2.65	7.24	6.00	9.89	8.00	2.36	2.00
2148	.90	1.35	2.25	2.25	5.69	4.25	1.42	9.94	9.00	11.36	11.00	4.36	4.00	
2137	5.60	.....	5.60	4.95	4.83	3.36	.70	8.19	5.00	8.89	6.00	3.63	2.50
2138	1.34	1.96	3.30	3.30	6.65	2.75	.79	9.40	8.00	10.19	9.00	7.03	7.00	
2139	.....	.....	.....	.....	7.77	3.60	.97	11.37	10.00	12.34	11.00	2.98	2.00
2140	.....	.....	.....	.....	8.12	4.26	1.16	12.38	8.00	13.54	10.00	3.23	2.50
2141	.20	.95	1.15	.80	7.77	2.98	1.96	10.75	7.00	12.71	9.00	*3.46	3.00	
2142	3.38	.81	4.19	4.53	3.38	4.41	.83	7.79	7.00	8.62	8.00	10.69	8.00	
2135	....	.....	.68	2.51	7.59	1.57	7.84	9.16	9.87	17.00	12.10	4.91	1.50
2134	.....	.....	.81	3.08	7.81	1.31	7.85	9.13	10.11	16.98	12.28	5.15	6.02
2143	.08	2.71	2.79	2.47	5.66	2.28	1.21	7.94	7.00	9.15	8.00	9.08	10.00	
2144	.10	.97	1.07	.82	5.20	3.23	1.38	8.43	6.00	9.81	7.00	1.49	1.00	

*These goods were licensed after the March Bulletin was issued.